International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 06 Issue: 12 | Dec 2019 www.irjet.net p-ISSN: 2395-0072

CAR ACCIDENT DETECTION AND REPORTING SYSTEM

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Abstract - ***Transportation is a basic need of society. It makes human life more easy and comfortable. As far as increasing transportation, accident is also increasing. It cause death of human and damages any part of body. To prevent the particular action, we try to implement a system is Accident detection and messaging system using GPS and GSM. In this system, the vibration sensor is used as an input to the system and corresponding response is analyzing by the Arduino. If accident occurs, sensors reading exceed the threshold and it takes the appropriate action. The SMS is send to the authorities and provide the immediate help to the people who met in an accident. The proposed embedded approach provides the promising result.***

Key Words: Arduino, GSM, GPS, LCD, Vibration Sensor.

1. INTRODUCTION

In twentieth country, the number of vehicles exponentially increase due to growth in the automobile industry. As the number of vehicle increases, the accident also increases. The reasons of most of the road accident are heterogeneous traffic and lack of traffic separation. According to World Health Organization(WHO), India is leading country in the road accident deaths. In India, 13 million peoples were dead in road accident in the year of 2014-15. These statistics are reported accidental records but there are numbers of accident which are unreported. Hence the numbers of actual accident are more than the statistic of WHO. According to the survey of Global Status Report on Road Safety, the reasons of the road accident are speeding, drunken driving, minimum use of safety appliances lie helmet and seat belts etc. The existing system mostly focused on the safety of the passenger but not on the immediate help after accident[1].

Our goal for the Integrated Automotive Safety system is to provide a level playing of all vehicles, regardless of age, when it comes to outfitting car as well as possible for any risks one can face on the road. These risks include rollovers, collision and non-responsive drivers after accidents and lack of location information after accident has occurred. These sort of risks plague every driver in the US and abroad, but sadly only the newest vehicle provide protection from dangers such as these. Where does that leave the average teen driving a late 90s, early 2000s high mileages car or perhaps an elderly person driving the same car they've had for 40 years? These car likely do not have sufficient safeguards for today risks, but our project can remedy this.

India has earned the dubious distinction of having more number of fatalities due to road accident in the world. Road safety is emerging as a major social concern around the world especially in India. Drinking and driving is already serious public health problem, which is likely to emerge as one of the most significant problems in the near future. The system implemented by us aims at reducing the road accidents in the near future due to drunken driving. The system detects the presence of Alcohol in the vehicle and immediately locks the engine of the vehicle.

2. LITERATURE SURVEY

Now-a-days, mobile phone is used almost by all people. With internet usage are also at all. So these mobile phone also provide communication platform as they are equipped with 2G & 3G network. There are lots of cause of accident of car and they are drunkenness of driver, drowsiness of driver, unconsciousness of driver and many time what happen driver is not responsible for accident but their neighboring car behavior also have made role to enforce accident. There are also some system have been implemented to avoid the accident but that do not give proper solution to implemented in car to avoid various accidents that they are normally being happen. For example, when driver at speed suppose 80km/h suddenly stop ignition system may leads to changes of dangerous accident.

There are several efforts, application: approaches are projected to produce security and safety just in case accident. A completely unique approach to extend the protection of road travel victimization the ideas of wireless detector network and therefore the Bluetooth protocol has been protected. It mentioned however, vehicles will type mobile ad-hoc network and exchange information perceived by the onboard sensor [3]. Platform of the robot in operation system and software system development atmosphere well-tried optimum resolution for public safety just in case of accident [2]. An honest survey of victimization personal itinerant, Microcontroller, Bluetooth and JAVA Technology has been well- tried [4].

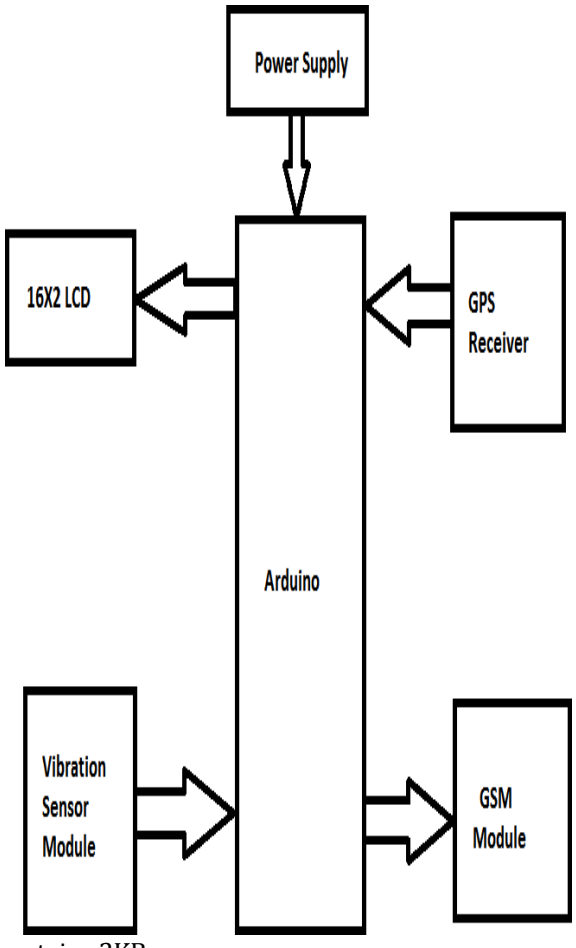
It developed integrated system to manage, management associated monitor accessories within the vehicle so as to attain the concept of an intelligence automobile with ability to uses personal mobile hand phone as a far of interface. Sensible phone-based accident detection will scale back overall traffic jam and awareness of emergency responders. This approach conjointly has been projected [5].

3. PROPOSED METHODOLOGY AND DISCUSSION

This system is not only efficient but also worthy to be implemented. Accident detection and messaging system can be fitted in vehicle (Ambulance & Police) and they are informed about any such untoward incident at the go. Accident detection and messaging system is execution simple as the system makes use of GSM & GPS technologies. GPS is used for taking the coordinate of the site of the accident while GSM is used for sending the message to phone. To make this process all the control is made using Arduino whereas LCD is used to display the accident.

ArduinoUno: It is a microcontroller development board made using ATmega328. ATmega328 has 14 digital input/output pins 6 analog inputs. It works on 16Mhz crystal oscillator also consist USA connection, a power Jack and a reset button.

It provides everything needed to support the microcontroller development board, it can be directly connected to computer with a cable and USB jack. Instead of using converter Arduino uses USB-to-serial converter. ATmega328 has 32KB of flash memory which is used to store the code. Among them 5KB is used for the boot loader.



It contains 2KB memory

Fig 1. Flowchart of the proposed system

SRAM and 1KB EEPROM. There is no restriction for input output pins. ATmega328 also supports various function such as serial communication ports, PWM, external interrupts etc.

Power Supply : A power supply is an electronic device that supplies electrical energy to an electrical load. Here Arduino Uno, sensor, GPS, GSM operates with DC 12V supply.

Vibration Sensor: Vibration sensor SW18010P is used for measuring and analyzing linear velocity, displacement or acceleration. Features of SW18010P. This is spring type directional vibration sensor, which can detects vibration in any angle.

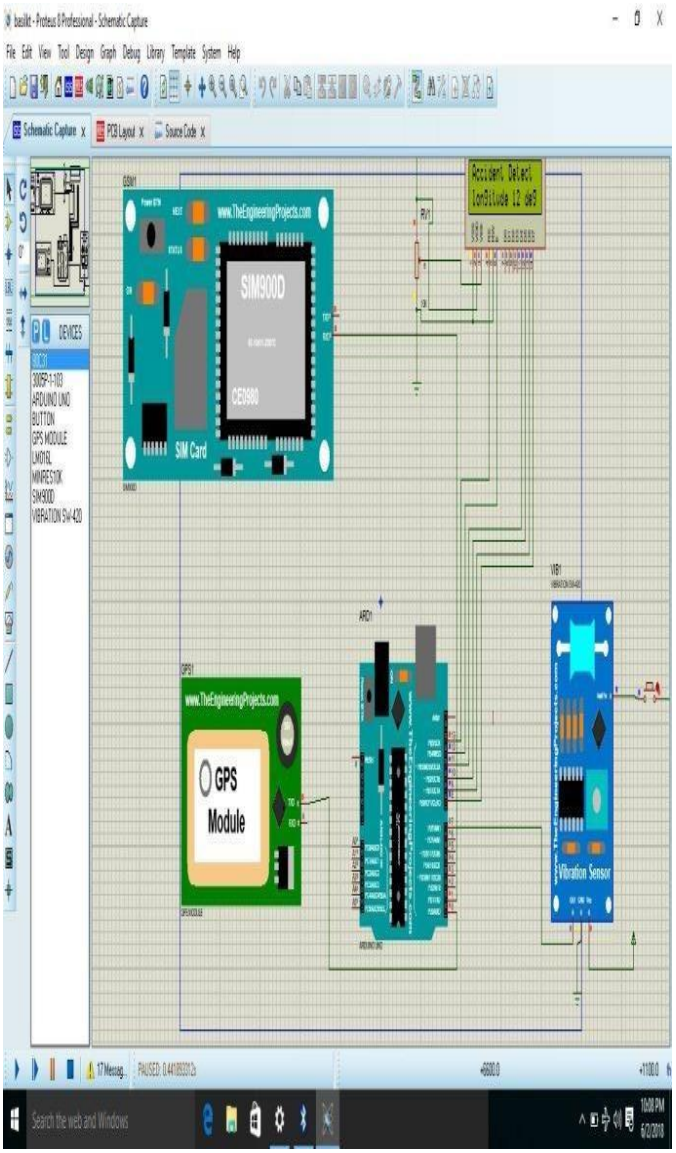
GSM: There are different GSM module are available in the market. SIMCOM developed different frequencies module includes 800MHz, 850MHz, 900MHz, 1800MHz, 1900MHz. We select SIM900a module for the proposed work. It is compact easy plug in module. The baud rate of the GSM 900a module is 9600-115200. Initially modem is in auto baud mode. The modem needs only two wires(Tx, Rx).

GPS: Global Position System(GPS) is a space based satellite navigation system that provides location and time information in all weather conditions, anywhere on or near the earth where there is an unobstructed line of sight to four or more GPs satellite. The system provides critical capabilities to military, civil, commercial users around the world [3]. It is maintained by the united states government and is freely accessible to anyone with a GPSreceiver.

16X2

LCD: 16x2 LCD means it can display 16 character per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, command and data. The command register stores the command instruction given to the LCD. A command is an instruction gives to LCD to do a predefined task like initializing it, clearing it's screen, setting the curser position, controlling display etc. The data register stores the data to be displayed on the LCD.

4. CIRCUIT DIAGRAM



5. RESULT

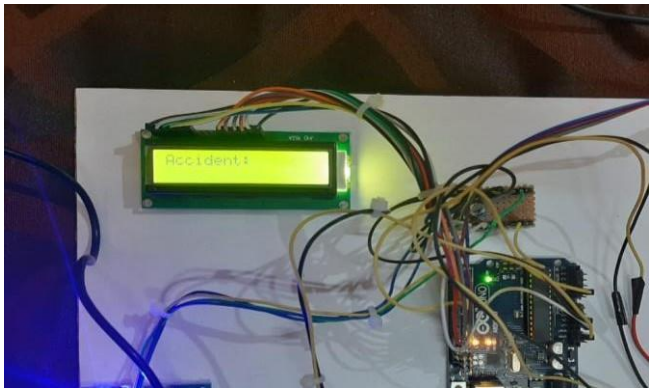


Fig 2. Interfacing microcontroller with the lcd

Whenever accident of vehicle is occurred the system detects accident from vehicle and send message through GSM module then the device sends messages to given mobile number.

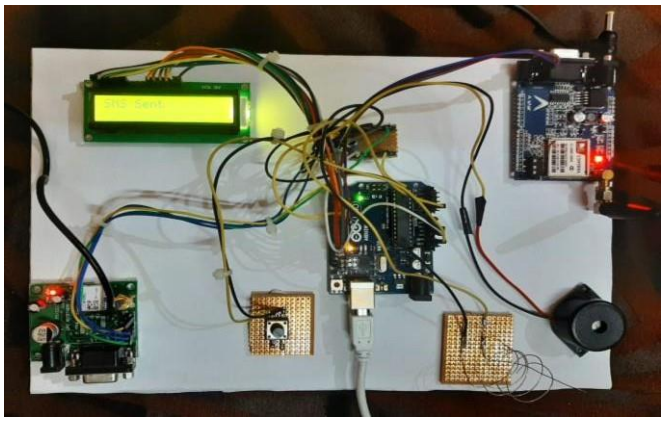


Fig 3. Interfacing All Other Modules With The Microcontroller

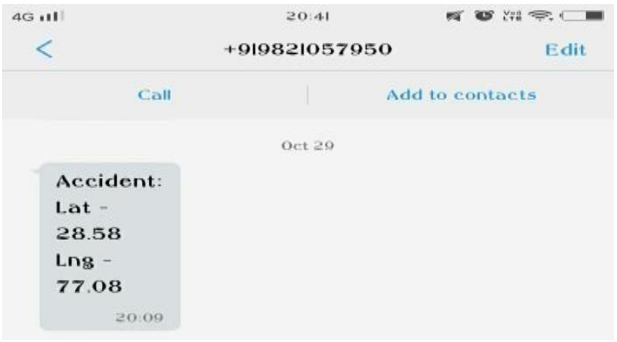


Fig 4. OUTPUT SCREEN

6. CONCLUSIONS

The proposed system deals with the accident alerting and detection. Arduino is the heart of the system which helps in transferring the message to different devices in the system. Vibration sensor will be activated when the accident occurs and the information is transferred to the registered number through GSM module. Using GPS the location can be sent through tracking system to cover the geographical coordinates over the area. The accident can be detected by a vibration sensor which is used as major module in the system. Our idea is used to detect accident and automate emergency assistance services. As a result, system is sending SMS to the nearest Emergency assistance service provider from accident location. The high demand of automobiles has also increased the traffic hazards and the road accidents. Life of the people is under high risk.

This is because of the lack of best emergency facilities available in our country. An automatic alarm device for vehicle accidents. This design is a system which can detect accidents in significantly less time and sends the basic information. This alert message is sent to the rescue team in a short time, which will help in saving the valuable lives. A Switch is also provided in order to terminate the sending of a

message in rare case where there is no casualty, this can save the precious time of the medical rescue team.

When the accident occurs the alert message is sent automatically to the rescue team and to the police station and the message is sent through the GSM module.

7. FUTURE SCOPE

The proposed system deals with the detection of the accidents. But this can be extended by providing medication to the victims at the accident spot. By increasing the technology we can also avoid accidents by providing alerts systems that can stop the vehicle to overcome the accidents. A wireless webcam can be added in this for capturing the images which will help in providing driver`s assistance. This can also be bettered by locking all the brakes automatically in case of accident. Mostly in accidents, it becomes serious as the drivers lose control and fail to stop the vehicle. In such cases, the vibration sensor will be triggered because of the vibrations received and also processed by the processor. The processor has to be linked to the devices which can lock the brakes when triggered. With this improvement, we can stop the vehicle and can weaken the impact of the accident. This system can also be utilized in fleet management, food services, traffic violation cases, rental vehicle services etc.

8. REFRENCES

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